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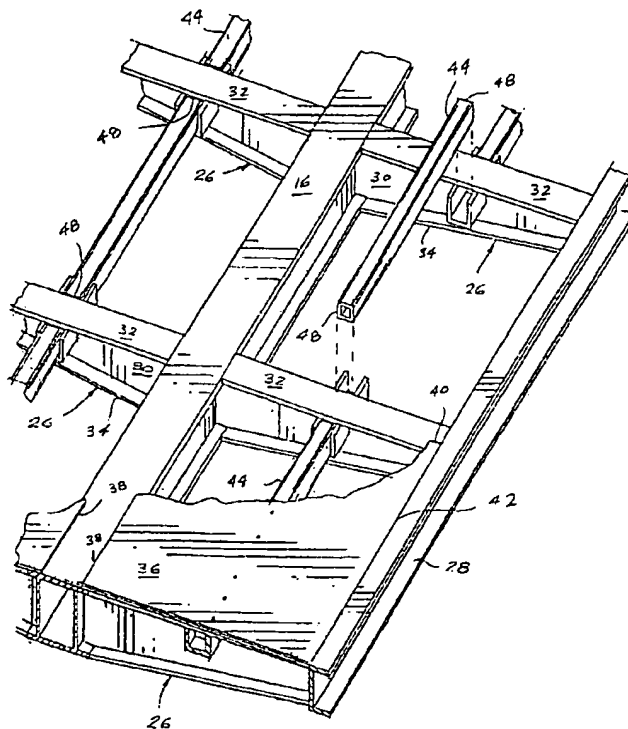
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(54) Titre : ELEMENT DE PLANCHER DE WAGON

(54) Title: RAILCAR FLOOR ASSEMBLY



(57) Abrégé/Abstract:

A railcar capable of carrying freight in commercial rail transport comprising a novel floor support structure and a novel method of assembly. The railcar may comprise a center beam car or other freight car having a load bearing floor. The railcar body comprises a plurality of floor sheets, a plurality of floor supports, and a frame comprising a plurality of elongate structural members. Each of the elongate floor supports has its ends supported in upwardly-opening channel segments on the elongate structural members. The floor supports are preferably plug welded to the floor sheets. In the preferred embodiment, the floor supports are tubular stringers of square or other rectangular cross section. The floor sheets and stringers may be pre-assembled for drop-in installation, with the stringer ends being lowered into pockets formed by the channel segments. The channel segments constrain the floor supports against displacement out of position while they are welded in place.

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Abstract

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## Railcar Floor Assembly

### Background of the Invention

The invention relates to a railcar, and more particularly to a railcar floor structure that may be used in center beam cars or other railcars having load bearing floors.

5 Center beam cars have for many years provided an efficient mode of transport for lumber products and other large, bulky freight loads. Center beam cars are shown and described in, e.g., U.S. Patent No. 5,088,417, No. 4,813, 359, No. 4,784,067 and No. 4,543,887. In the past, center beam cars were frequently manufactured with open floors. While floor sheets are desirable for certain loads, the floor sheets add weight and expense to  
10 the cars. It is an object of the invention to provide an improved floor structure that may be useful in center beam cars or other railcars. Another object of the invention is to provide an improved method of constructing railcar floors.

### Summary of the Invention

15 The invention provides a railcar capable of carrying freight in commercial rail transport comprising a novel floor support structure and a novel method of assembly. The railcar may comprise a center beam car or other freight car having a load bearing floor. The railcar body comprises a plurality of floor sheets, a plurality of floor supports, and a frame comprising a  
20 plurality of elongate structural members. Each of the elongate floor supports has its ends supported in upwardly-opening channel segments on the elongate structural members. The floor supports are preferably plug welded to the floor sheets.

In the preferred embodiment, the floor supports are tubular stringers of square or other  
25 rectangular cross section. The floor sheets and stringers may be pre-assembled for drop-in installation, with the stringer ends being lowered into pockets formed by the channel segments. The channel segments constrain the floor supports against displacement out of position while they are welded in place.

### Brief Description of the Drawings

30 Fig. 1 illustrates a portion of a floor and underlying structure of a railcar in accordance with a preferred embodiment of the invention.

35 Fig. 2 is a transverse sectional view of the floor and underlying structure of Fig. 1, with the right half of Fig. 2 illustrating a section taken at the bolster, and the left half of Fig. 2 illustrating a section taken at a cross bearer.

Fig. 3 is a sectional view taken along lines 3-3 in Fig. 4.

40 Fig. 4 is a plan view of a railcar including the floor and underlying structural members of Fig. 1. In the left half, the floor sheets are not shown, and the center beam is shown in section.

Fig. 5 is an elevation of the railcar of Fig. 4.

### Detailed Description of Preferred Embodiments

5        The invention is preferably embodied in a railcar 10 having an improved structure for supporting its floor 12. The invention is particularly useful in center beam cars, and is shown in a center beam car in the illustrated embodiment. In other embodiments, floor structures in accordance with the invention may be employed in other types of railcars having load bearing floors.

10        The illustrated railcar comprises pair of trucks 14 supporting a car body. The car body comprises a frame that includes a center beam comprising a center sill 16, a top chord 18, a plurality of columns 20 extending upward from the center sill to the top chord, and a plurality of diagonal braces 22 extending between the center sill and the top chord.

15        The center beam is supported on the trucks. A pair of body bolsters 24 extend transversely of the center sill over the trucks 14. A plurality of cross bearers are supported by the center sill 16, and a pair of side sills 28 are supported by the cross bearers 26. The side sills in the illustrated embodiment are of channel shaped cross-section. In other embodiments, side sills of other cross-section, e.g., Z-shaped members, I-beams, or angles, may be employed.

20        Each of the cross bearers 26 is preferably of I-shaped cross-section, comprising a vertical web 30 extending between a top flange 32 and a bottom flange 34. The top flange is sloped inward slightly toward the center beam. The web has a vertical dimension that decreases from the center sill to the side sills.

25        Floor sheets 36 are provided along each side of the center beam. The floor sheets are preferably rectangular, and have their inner edges 38 supported on the center sill, and their transverse edges 40 supported on the top flanges of the cross bearers. Their outer edges 42 may be supported on the side sills, or may be spaced therefrom. Floor supports 44 extend longitudinally between the cross bearers to provide additional support to the floor sheets. In the illustrated embodiment, the floor supports are tubular stringers of square or other rectangular cross section.

30        In accordance with the invention, upwardly opening channel segments 46 are provided on the cross bearers 26 and bolsters 24 to support the ends 48 of the stringers. At the cross bearers, each of the channel segments is preferably welded to the web 30 and the top flange 32, and extends longitudinally beyond the top flange to provide an upwardly opening pocket into which the stringer end may be lowered. At the bolsters, a similar arrangement is provided, as shown in FIG. 3.

35        In the preferred method of assembly, the floor sheets 36 and stringers 44 are pre-assembled for drop-in installation, with the stringer ends 48 being lowered into the pockets formed by the channel segments to position the floor sheets for welding. The channel segments support and constrain the stringers 44 and floor sheets 36 until they are welded in place. In other embodiments, the stringers may be installed before attachment to the floor sheets.

The floor supports are preferably plug welded to the floor sheets. More particularly, openings 50 are provided in the floor sheets, and the floor sheets are welded to the underlying supports at the openings, with the openings being filled during welding to provide the floor sheet with a flat upper surface at the location of the weld.

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It should be appreciated that the invention provides an improved floor structure for railcars, and an improved method of assembling a floor structure. While preferred embodiments have been described above, the invention is not limited to these or any other particular embodiments. The invention is further described by the following claims.

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What is claimed is:

1. A railcar capable of carrying loads in commercial rail transport comprising a pair of trucks and a railcar body supported on said trucks, said railcar body comprising a frame including a plurality of elongated structural members and a plurality of floor supports, and a plurality of floor sheets, said railcar further comprising a plurality of upwardly-opening channel segments supported by said structural members, each of said floor supports having opposite ends supported in said upwardly-opening channel segments.
2. The railcar of claim 1 wherein each of said floor sheets is plug welded to a respective one of said floor supports.
3. The railcar of claim 1 wherein each of said structural members has a vertical web and a top flange, and each of said channel segments is welded to said web and to said top flange and extends outward from said web beyond said flange to provide an upwardly opening pocket receiving said opposite ends of said floor supports.
4. A method of assembling a railcar floor comprising:  
 providing at least one pair of cross bearers;  
 providing a floor sheet;  
 securing at least one stringer to each floor sheet;  
 providing channel supports on said cross bearers;  
 lowering the ends of said stringers into said channel supports; and  
 securing said ends of said stringers to said channel supports.
5. The method of claim 4 further comprising securing a floor plate to said stringers.
6. The method of claim 5 wherein securing the floor plate to the stringers comprises plug welding the floor plate to the stringers.
7. The method of claim 6 wherein the floor plate is secured to the stringers to provide a pre-assembled, reinforced floor section before the ends of the stringers are lowered into said channel supports.
8. In a center beam railcar capable of carrying loads in commercial rail transport, comprising a pair of trucks and a railcar body supported on said trucks, said railcar body comprising a plurality of floor sheets and a plurality of structural members providing support to said floor sheets, the improvement comprising a plurality of upwardly-opening channel segments supported by said structural members, and a plurality of floor supports, each of said floor supports having opposite ends supported in said upwardly-opening channel segments.
9. The improvement of claim 8 wherein each of said floor sheets is plug welded to a respective one of said floor supports.
10. The improvement of claim 9 wherein each of said structural members has a

vertical web and a top flange, and wherein said channel segments are secured to said web and top flange.

11. The improvement of claim 10 wherein each of said floor supports comprises a longitudinally extending stringer of tubular configuration.

5 12. The improvement of claim 10 wherein each of said floor supports comprises a longitudinally extending stringer of rectangular cross-section.

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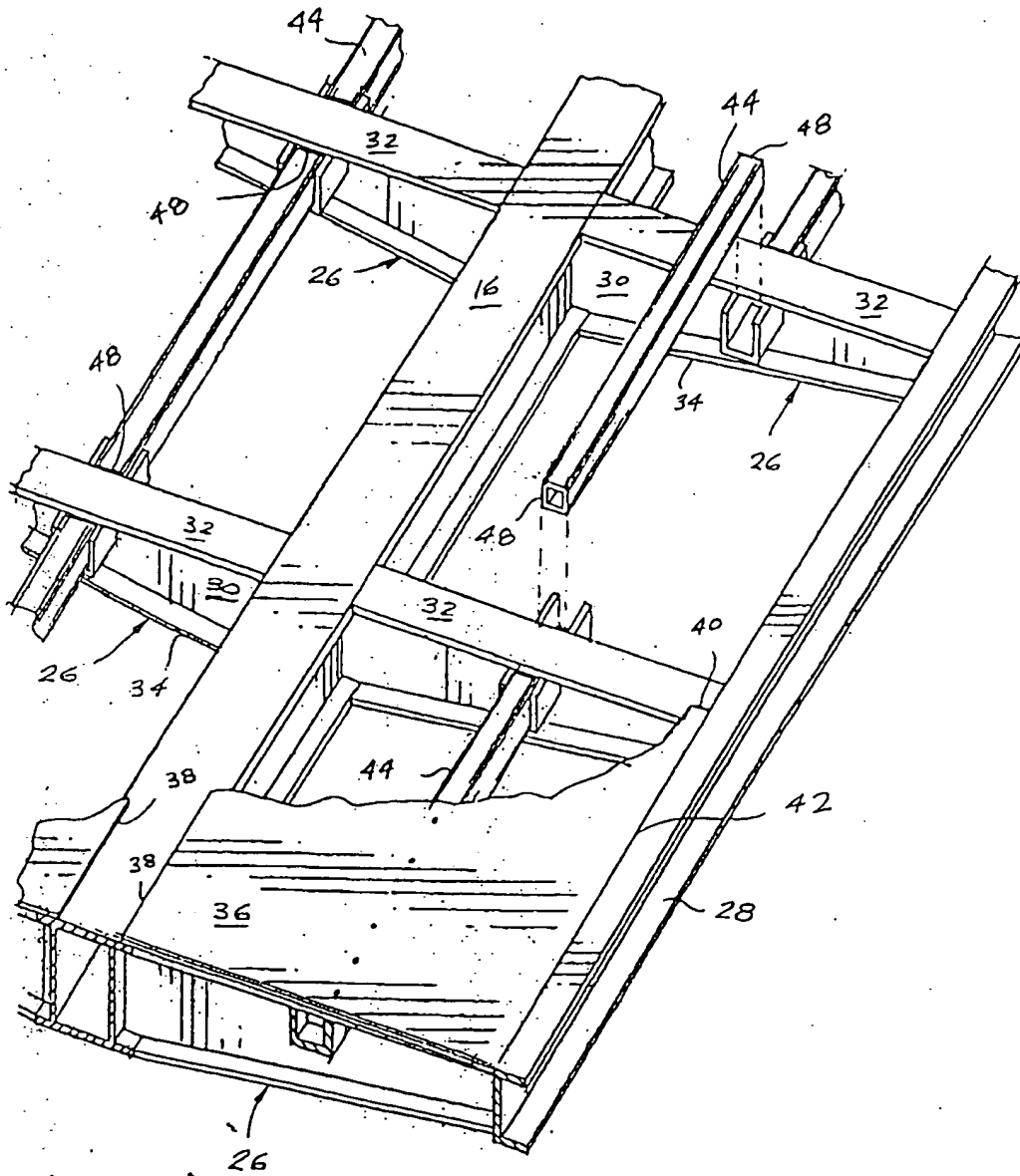


Fig. 1



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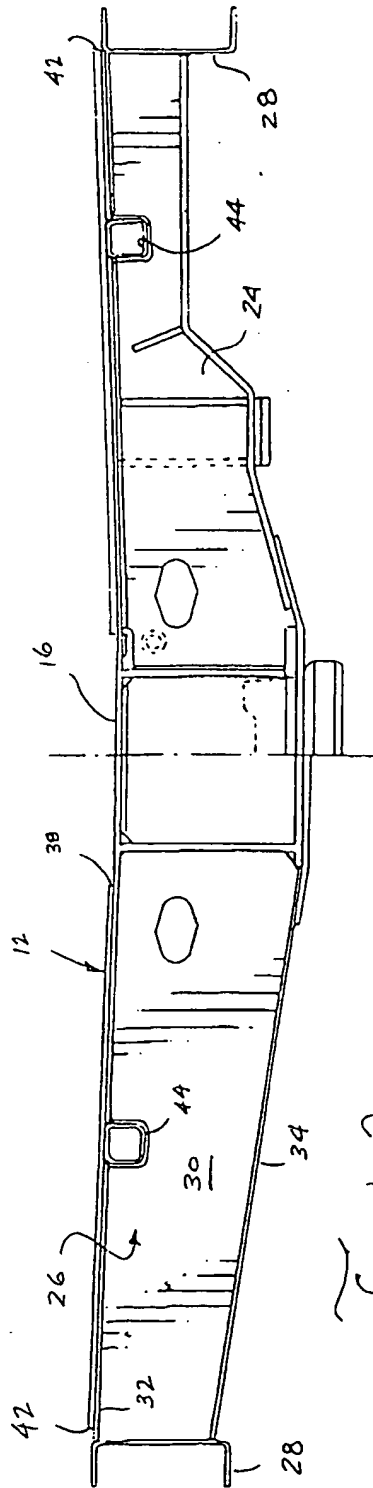


Fig. 2

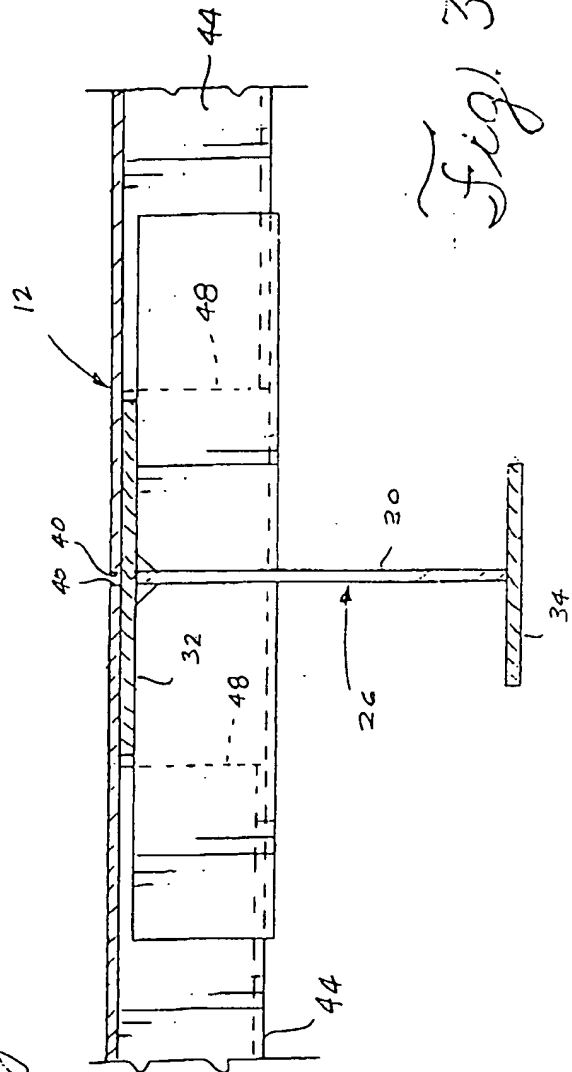


Fig. 3

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